

Warm up.  
Simplify.

$$\begin{array}{ll} \sqrt{4a^2} & 2a \\ \sqrt{8a^2} & 2a\sqrt{2} \\ \sqrt{a^2b^2} & ab \end{array} \quad \begin{array}{ll} \sqrt{12a^2b^2} & 2ab\sqrt{3} \\ \sqrt{a^2+b^2} & \text{(circled)} \\ \sqrt{4(a^2+b^2)} & 2\sqrt{a^2+b^2} \end{array}$$

Prita is grocery shopping. She wants to buy a loaf of bread that costs \$5.29, ten apples that cost \$1.05 each, and three pounds of bananas that cost \$0.89 per pound. Which is the **best estimate** for the total cost of Prita's groceries?

- A. \$9
- B. \$17
- C. \$18
- D. \$20

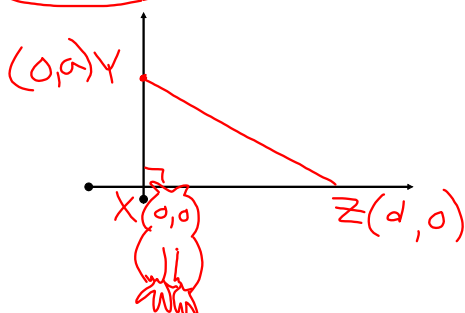
#### 4-7 Triangles and Coordinate Proof

##### Tips

1. Use Origin as vertex or center
2. At least one side on x-axis
3. 1st Quadrant if possible
4. Use easiest coordinates possible

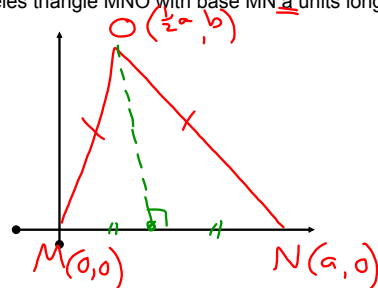
##### Example 1

Right triangle XYZ with hypotenuse  $\overline{YZ}$   
 $XZ = d$  units long



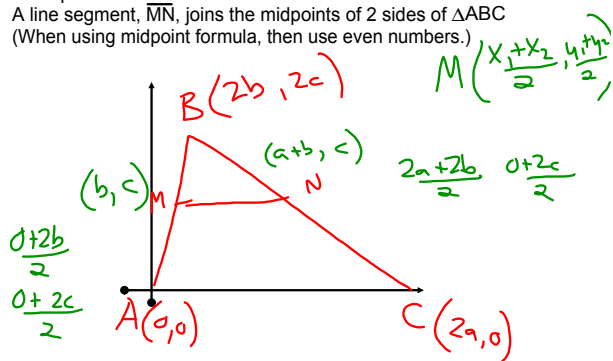
##### Example 2

Isosceles triangle MNO with base  $\overline{MN}$  a units long



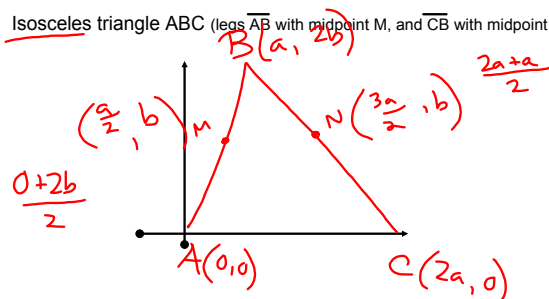
## Example 3

A line segment,  $\overline{MN}$ , joins the midpoints of 2 sides of  $\triangle ABC$   
 (When using midpoint formula, then use even numbers.)



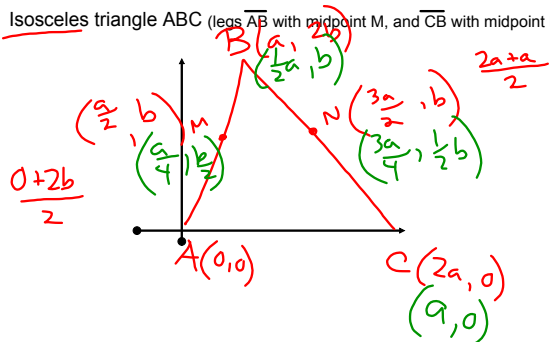
## Example 4

Isosceles triangle  $ABC$  (legs  $\overline{AB}$  with midpoint  $M$ , and  $\overline{CB}$  with midpoint  $N$ )



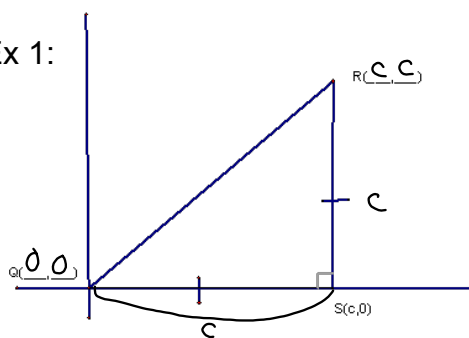
## Example 4

Isosceles triangle  $ABC$  (legs  $\overline{AB}$  with midpoint  $M$ , and  $\overline{CB}$  with midpoint  $N$ )

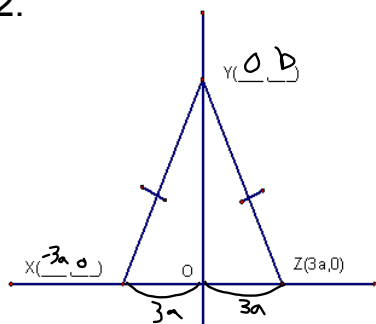


Fill in the missing coordinates.

Ex 1:



Ex 2:

Coordinate Proof

$$\text{Distance Formula } d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$\text{Slope } m = \frac{y_2 - y_1}{x_2 - x_1}$$

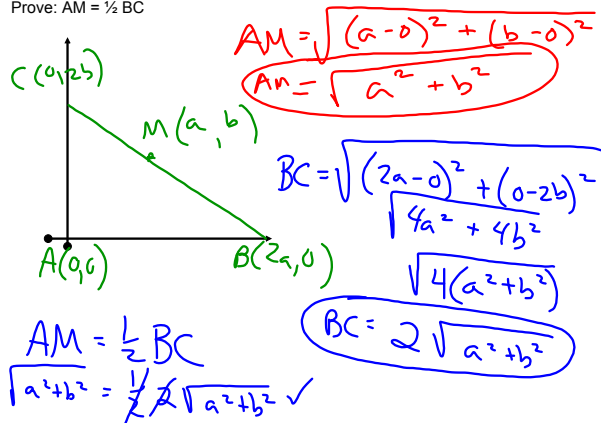
Midpoint Formula

$$M\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

// lines have same slope  
 $\perp$  lines have opp. recip. slopes

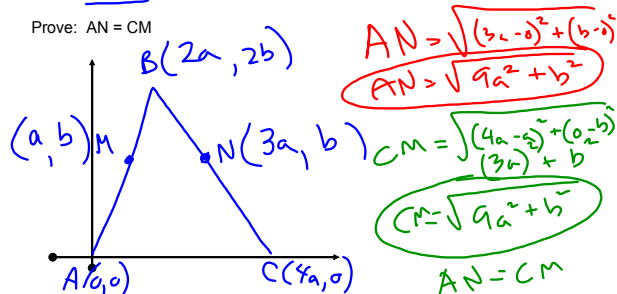
When using midpoint formula, then use even numbers.

Example

Prove that the measure of the segment that joins the vertex of a right  $\angle$  in a right  $\triangle$  to midpoint of the hypotenuse =  $\frac{1}{2}$  the measure of the hypotenuseGiven: Right  $\triangle ABC$  with hypotenuse  $\overline{BC}$ . (M is the midpoint of  $\overline{BC}$ .)Prove:  $AM = \frac{1}{2} BC$ 

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25. The segments joining the vertices to the midpoints of the legs of an isosceles triangle are congruent.

Given: Isosceles triangle ABC. (legs  $\overline{AB}$  with midpoint M, and  $\overline{CB}$  with midpoint N)Prove:  $AN = CM$ 

Homework  
P 224-225  
10-13, 16-24, 26-28(on paper handout)